

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA**

**IN THE MATTER OF THE APPLICATION BY DEUEL HARVEST WIND ENERGY LLC
FOR ENERGY FACILITY PERMITS OF A WIND ENERGY FACILITY AND A
345-KV TRANSMISSION LINE IN DEUEL COUNTY, SOUTH DAKOTA FOR THE
DEUEL HARVEST NORTH WIND FARM**

SD PUC DOCKET EL18-053

**PRE-FILED REBUTTAL TESTIMONY OF ANDREA GIAMPOLI
ON BEHALF OF DEUEL HARVEST WIND ENERGY LLC**

April 1, 2019

1 **I. INTRODUCTION**

2

3 **Q. Please state your name.**

4 A. My name is Andrea Giampoli.

5

6 **Q. Have you previously provided testimony in this docket?**

7 A. Yes. I submitted Direct Testimony on November 30, 2018, and I submitted
8 Supplemental Testimony on February 14, 2019.

9

10 **II. PURPOSE OF TESTIMONY**

11

12 **Q. What is the purpose of your Rebuttal Testimony?**

13 A. The purpose of my Rebuttal Testimony is to provide updates to the Deuel Harvest
14 North Wind Farm’s (“Project”) Bird and Bat Conservation Strategy (“BBCS”); discuss
15 additional survey work that will be conducted for the Project; respond to the
16 testimony of Tom Kirschenmann, of the South Dakota Department of Game, Fish
17 and Parks (“SDGFP”); and, respond to intervenor testimony concerning the Project’s
18 potential wildlife impacts.

19

20 **Q. What exhibits are attached to your Rebuttal Testimony?**

21 A. The following exhibits are attached to my Rebuttal Testimony:

- 22 • Exhibit 1: Updated BBCS
- 23 • Exhibit 2: South Dakota Natural Heritage Database Response, August 10,
24 2016
- 25 • Exhibit 3: South Dakota Natural Heritage Database Element Occurrence
26 Record, August 10, 2016

27

28 **III. UPDATE TO BBCS**

29

30 **Q. Please describe the changes made in the updated BBCS.**

31 A. Updates were made to two of the figures in the BBCS. Figure 2.3 was updated to
32 incorporate slight adjustments to the turbine and road layouts (Exhibit 1). Figure 2.4
33 was updated to incorporate the most recent public lands and USFWS easement files
34 received from the SDGFP and United States Fish and Wildlife Service (USFWS).

35

36 In addition, there was a miscalculation in the distances between turbines and certain
37 resources noted in Section 4.1.1. Thus, the section was updated to reflect the
38 current measurements between the Project facilities, public lands, and USFWS
39 easements. See also the Rebuttal Testimony of Michael Svedeman.

40

41 Finally, information on the bald eagle nest discussed at the public input hearing and
42 related consultation with SDGFP and USFWS was added to Sections 1.5 and 3.1.1,
43 and the bald eagle nest was also incorporated into Figure 3.1 and Section 4.1.1.

44

45 **Q. Do you anticipate that further updates will be made to the BBCS?**

46 A. Yes. As stated in Section 1.2 of the BBCS, it is a “living document that will evolve
47 throughout the life of the Project as needed in response to changing conditions”
48 (Exhibit 1). Thus, additional updates to the BBCS may occur during development, as
49 well as operations.

50

51 **IV. ADDITIONAL PROJECT SURVEYS**

52

53 **Q. Will Deuel Harvest conduct additional wildlife surveys for the Project before**
54 **construction?**

55 A. Yes. Deuel Harvest is currently coordinating with SDGFP and USFWS in the
56 development of a study plan to conduct eagle flight path mapping and eagle nest
57 monitoring at the identified eagle nest north of Lake Alice. Deuel Harvest will also
58 conduct another raptor nest aerial survey in Spring 2019.

59

60 **V. RESPONSE TO KIRSCHENMANN**

61

62 **Q. Please describe the Project's coordination with SDGFP.**

63 A. Deuel Harvest's initial coordination was the submission of a Natural Heritage
64 Database request in June 2016. A response was received in August 2016 (Exhibits
65 2-3), which indicated that the federal endangered Poweshiek skipperling and the
66 federal threatened Dakota skipper had been documented in Deuel County, but no
67 other state or federally endangered or protected species were included in the
68 response.

69
70 Deuel Harvest next conducted a conference call with SDGFP and USFWS on
71 August 12, 2016 to provide the pre-construction survey methods for the site
72 characterization, avian use, grassland breeding bird, raptor nest, bat acoustic, and
73 bat mist netting surveys. Deuel Harvest also shared the results of the site
74 characterization study, which included a list of the potential species of concern and
75 sensitive areas, including USFWS wetland and grassland easements. Both agencies
76 encouraged Deuel Harvest to site facilities to minimize impacts to grasslands and
77 wetlands, and USFWS suggested Deuel Harvest review the Shaffer and Buhl (2015)
78 study. SDGFP asked if lek surveys were proposed for the Project area. Deuel
79 Harvest said that lek surveys were not planned and asked if they were needed.
80 SDGFP and USFWS said that they did not expect leks in this area of the county and
81 said that they would share the lek records. Neither agency recommended lek
82 surveys. That same day, SDGFP sent an email with three known lek locations in
83 Deuel County, and noted that none were located in the Project area. SDGFP said
84 that it would follow up with any additional information on lek or grouse habitat in the
85 area. No additional information was provided.

86
87 Deuel Harvest also met with SDGFP and USFWS in Pierre, SD on May 25, 2017, to
88 discuss the results of the first year of surveys and to provide the methods for
89 ongoing surveys, including avian surveys, raptor nest surveys and wetland
90 delineations. SDGFP asked if Deuel Harvest was planning to conduct another year
91 of bat acoustic surveys, and requested that it conduct a second year during the most
92 bat active season in the fall to compare results from the first year. Both agencies

93 again encouraged Deuel Harvest to minimize impacts to grasslands and wetlands,
94 and USFWS recommended that Deuel Harvest also read the Loesch et al. (2013)
95 paper. USFWS also recommended Dakota skipper and Poweshiek skipperling
96 habitat surveys. Following agency recommendation, a second year of bat acoustic
97 surveys and a butterfly habitat assessment were conducted in Summer/Fall 2017.

98
99 SDGFP and USFWS expressed interest in visiting the site, so a site visit was
100 planned for June 27, 2017. On the day of the site visit, SDGFP was unable to attend.
101 Deuel Harvest and USFWS toured the site.

102
103 SDGFP and USFWS told Deuel Harvest that they were interested in having a
104 discussion specifically about siting turbines to minimize impacts to grasslands and
105 wetlands. Deuel Harvest visited SDGFP and USFWS in Pierre, SD on February 13,
106 2018, to share the efforts they had made to minimize impacts to grasslands and
107 wetlands. The agencies recommended removing the turbines sited in the northwest
108 corner of the Project area because of the concentration of wetlands in that area.
109 Deuel Harvest later incorporated this recommendation by removing 12 proposed
110 turbines in the northwest corner. The agencies also requested that Deuel Harvest
111 consider the observation locations of grasshopper sparrow when siting turbines. Of
112 the nine grasshopper sparrow observation locations, six are located on the edge of
113 the Project boundary with turbines only located on one side of the observation
114 location to minimize disturbance. Further, turbines are currently sited no closer than
115 335 meters to the nearest grasshopper sparrow observation location. SDGFP and
116 USFWS said that they appreciated Deuel Harvest's ongoing coordination and
117 continued to encourage them to minimize impacts as siting continued. During this
118 meeting, Deuel Harvest also shared the methods and results of additional and
119 ongoing surveys, including the site characterization and wetlands studies for new
120 areas, the butterfly habitat assessment, avian use and bat acoustic surveys.

121
122 Deuel Harvest reached out to SDGFP and USFWS in July 2018 to discuss how the
123 warm weather had limited the emergence of the butterfly populations and whether

124 that would change SDGFP and USFWS's recommendations concerning the
125 protocols for its presence survey for the Dakota skipper and Poweshiek skipperling.
126 These protocols had originally been discussed in February 2018. SDGFP responded
127 recommending that Deuel Harvest coordinate with USFWS on the issue, so Deuel
128 Harvest coordinated with USFWS.

129

130 In January 2019, Deuel Harvest requested information on a bald eagle nest north of
131 Lake Alice from SDGFP. The agency responded with the nest's coordinates and a
132 few details. Deuel Harvest conducted two calls with SDGFP on the nest and Deuel
133 Harvest's plans for nest monitoring on February 11 and March 25, 2019.

134

135 **Q. Do you anticipate that Project coordination with SDGFP will continue?**

136 A. Yes.

137

138 **Q. Mr. Kirschenmann states that “[w]hile survey methods were reasonable and**
139 **appropriate approaches, pre-construction survey methodology and timing**
140 **differed between years, making comparisons of data across years difficult.”**

141 **What is your response?**

142 SDGFP and USFWS reviewed Deuel Harvest's pre-construction survey protocols in
143 meetings in August 2016 and May 2017. The methodologies of the surveys below
144 changed in subsequent years because the objectives of the surveys were different
145 (raptor nest survey and bat acoustic survey) or more geographically refined (butterfly
146 habitat assessment and wetlands surveys).

147

148 The first year raptor nest survey (2016) was conducted from a helicopter and the
149 objective of the survey was to document the location and status of all bald eagle and
150 other raptor nests observed within the applicable buffers. The objective of the
151 ground-based raptor nest survey the following year (2017) was to assess the status
152 of the nests found in 2016 (Appendix I).

153

154 The objective of the 2016 bat acoustic survey was to assess seasonal bat activity
155 levels. While Deuel Harvest had originally planned to conduct one year of survey, in
156 the May 25, 2017 meeting, the SDGFP requested that the bat acoustic survey be
157 conducted again in the fall of 2017 so that the 2016 and 2017 fall activity could be
158 compared. Following SDGFP's request, Deuel Harvest conducted a second year of
159 acoustic monitoring from July to October, 2017, at the same monitoring location as
160 2016 (Appendix M). Although different equipment was used in 2017 relative to 2016,
161 it was set up and programmed to detect activity in the same way as the original
162 equipment and data analyses were comparable across the technologies. A
163 comparison of the 2016 and 2017 bat acoustic survey results was presented to
164 SDGFP and USFWS in the February 13, 2018 meeting and neither agency raised
165 concerns about the survey methodologies or the comparison of the results.

166

167 Other surveys that followed different methods in subsequent years were those that
168 originally focused on broader areas that were refined to the Project layout in
169 following years. For example, a landscape level butterfly habitat assessment was
170 conducted in 2017, and then a more detailed, field-based assessment was
171 conducted in 2018 (Appendix N). This was also true for the wetlands desktop
172 assessment compared to the later in-field wetlands delineation (Appendix G).

173

174 **Q. Mr. Kirschenmann states, "little information was gathered for bat activity**
175 **levels in grassland and wetland areas." Do you have a response?**

176 A. Yes. The methods for this survey were shared in detail with SDGFP and USFWS,
177 including a map of the detector locations, on August 12, 2016. Neither agency raised
178 this as a concern. This approach was taken because the Project facilities are largely
179 sited in cropland, minimizing the potential to impact bats in grassland or wetland
180 areas.

181

182 **Q. Mr. Kirschenmann notes that grouse lek surveys were not conducted for the**
183 **Project; why were grouse lek surveys not conducted for the Project?**

184 A. As discussed above, in the August 12, 2016 meeting, SDGFP asked Deuel Harvest
185 if it was planning to conduct a lek survey. Deuel Harvest said that it was not planning
186 to conduct a lek survey, but asked if it should conduct the survey. SDGFP and
187 USFWS said that they were not aware of leks in this part of the county, and neither
188 agency recommended that lek surveys be conducted. Later that day, SDGFP sent
189 Deuel Harvest lek data from Deuel County and noted that there were no lek records
190 within the Project area. No grouse or prairie chickens were observed during the
191 2016 grassland breeding bird survey, and only two sharp-tailed grouse were
192 observed incidentally 0.75 mile north of the Project area during more than 839 hours
193 of avian surveys. Based on agency consultation, and after assessing the data, Deuel
194 Harvest determined that lek surveys were not needed.

195

196 **Q. On page 7 of his testimony, Mr. Kirschenmann discusses the timing of the**
197 **Project's wetland delineation surveys. What is your response?**

198 A. The wetland delineation surveys were conducted in accordance with the 1987 Corps
199 of Engineers Wetlands Delineation Manual¹. The Army Corps of Engineers is the
200 federal agency that regulates federally jurisdictional wetlands and waterways. It is
201 the industry standard to follow this Manual when conducting wetland delineations.
202 The Manual recommends that delineations be conducted during the "growing
203 season," which is defined as "the portion of the year when soil temperature
204 (measured 20 inches below the surface) is above biological zero." The 2,758-acre
205 survey corridor was delineated August 21 through September 9, 2018, during the
206 growing season. Due to a slight layout adjustment, an additional 30 acres, or 1% of
207 the delineation area, were surveyed on November 14, 2018. While this survey was
208 conducted at the end of the growing season, this additional delineation identified 0.7
209 acre of wetlands, less than 1% of the total wetlands delineated in the Project survey
210 corridor.

211

¹ Environmental Laboratory. (1987). "Corps of Engineers Wetlands Delineation Manual," Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Miss.

212 Further, SDGFP approved of Deuel Harvest’s plans to conduct wetland surveys in
213 the Project area in fall 2016. Deuel Harvest relied on this feedback in also
214 conducting wetlands delineations in fall 2018.

215

216 **Q. Mr. Kirschenmann recommends that post-construction avian mortality**
217 **monitoring be conducted for at least two years. What is your response?**

218 A. As recommended under the USFWS Land-based Wind Energy Guidelines², Deuel
219 Harvest will conduct at least one year of post-construction monitoring and will review
220 the results of the first year of post-construction monitoring to determine whether a
221 second year of post-construction monitoring is needed. Deuel Harvest has
222 developed a Bird and Bat Conservation Strategy (Appendix O) that identifies an
223 adaptive management plan that will be followed throughout the life of the project.
224 The adaptive management plan outlines what steps will be taken if there is greater
225 impact than expected following the first year of post-construction monitoring. The
226 wind industry has collected a lot of post-construction monitoring data throughout the
227 United States and is compiling this data through the American Wind Wildlife
228 Information Center. Deuel Harvest believes that one year of post-construction
229 monitoring data, together with compiled regional data, will be sufficient to assess the
230 impacts of the Project on birds and bats. The adaptive management plan will also
231 include training of operation and maintenance staff to monitor the site for bird and
232 bat carcasses and will outline the approach to be taken if the operations and
233 maintenance staff observes increases at any point in the Project lifetime.

234

235 **Q. Mr. Kirschenmann notes SDGFP’s recommendation “that efforts should be**
236 **made to avoid placement of turbines and new roads in grasslands, especially**
237 **untilled prairie.” Was the Project sited with this recommendation in mind?**

238 A. Yes. As Mr. Kirschenmann noted, “there were efforts to avoid placement of turbines
239 in untilled native prairie.” The Project team, including the Project developer,

² Available at https://www.fws.gov/ecological-services/es-library/pdfs/WEG_final.pdf.

240 engineer, and environmental manager, worked closely with USFWS, SDGFP, and
241 The Nature Conservancy (“TNC”) to avoid siting turbines in potentially undisturbed
242 grasslands. The agency meeting on February 13, 2018 was held primarily for
243 SDGFP, USFWS, and Deuel Harvest to discuss the turbine layout and Deuel
244 Harvest’s efforts to minimize impacts to potentially undisturbed grasslands. Although
245 Mr. Kirschenmann also stated that “[a]voidance of all grassland habitat will be
246 challenging in this part of the state,” Deuel Harvest has been able to minimize its
247 permanent impacts to potentially undisturbed grasslands to less than one-quarter of
248 1% of the 16,285 acres of potentially undisturbed grasslands mapped in the Project
249 area (SDSU).

250

251 **Q. Mr. Kirschenmann notes SDGFP’s recommendation “that impacts to native**
252 **prairie and wetlands should be mitigated.” What is your response to this**
253 **recommendation?**

254 A. Deuel Harvest was sited to avoid all state and federally managed lands, including
255 USFWS grassland and wetland easements. Further, as discussed above, the
256 Project will have permanent impacts to undisturbed grasslands of less than one-
257 quarter of 1% of the 16,285 acres of potentially undisturbed grasslands mapped in
258 the Project area (SDSU). The Project was also sited so that no turbines are located
259 within wetland basins, and only 12 of 119 (10%) access roads have the potential to
260 cross wetlands. However, as the layout is being finalized, efforts continue to be
261 made to site around these resources, in order to further minimize permanent
262 impacts.

263

264 **Q. Mr. Kirschenmann refers to studies by Loesch (2013) and Shaffer and Buhl**
265 **(2016) (page 13). Are you familiar with these studies?**

266 A. Yes.

267

268 **Q. In your opinion, how do the studies cited by Mr. Kirschenmann relate to the**
269 **Project?**

270 A. These studies found that wind turbines may have indirect displacement effects on
271 grassland birds (Shaffer and Buhl 2016) and waterfowl (Loesch 2013). That is, they
272 found that there was a lower density of grassland birds and waterfowl, respectively,
273 near turbines compared to areas farther away from turbines. These studies suggest
274 that a wind project could displace grassland birds and waterfowl.

275
276 However, what the research does not tell us is what happened to the birds that were
277 no longer near the turbines. We do not have data addressing whether the birds
278 moved to another area and continued to breed successfully. Additionally, other
279 studies exist where different conclusions were reached indirect impacts to grassland
280 birds and waterfowl. As a result, it is uncertain to what extent, if any, the Project
281 may result in displacement of these species.

282
283 USFWS provided both of these studies to Deuel Harvest during coordination, and
284 these issues were discussed during each meeting. As mentioned above, the
285 February 2018 meeting between the agencies and Deuel Harvest focused on the
286 efforts Deuel Harvest was making to minimize its impacts to grasslands and
287 wetlands to limit displacement effects on grassland birds and waterfowl. As
288 explained above, following that meeting, Deuel Harvest removed 15 turbines sited in
289 an area of concentrated wetlands, and made efforts to site turbines away from areas
290 with observations of grasshopper sparrow, a species studied by Shaffer and Buhl,
291 and mentioned by the USFWS. Deuel Harvest expects minimal displacement effects
292 to grassland birds and waterfowl.

293
294 **Q. Mr. Kirschenmann notes SDGFP’s recommendation that “the placement of**
295 **turbines and roads in contiguous blocks of grassland” be avoided. How did**
296 **the Project respond to this recommendation?**

297 A. Following SDGFP and USFWS’s recommendation, the Project used South Dakota
298 State University’s (“SDSU”) geographic information systems (“GIS”) layer for
299 potentially undisturbed grasslands to minimize its impacts on contiguous blocks of
300 grassland. When resources could not be avoided, Deuel Harvest sited facilities near

301 the boundary of the larger grassland tracts to minimize the fragmentation effects. For
302 example, seven out of 119 turbines (6%) are currently sited on areas that SDSU
303 identified as potentially undisturbed grasslands, and four of these are located on the
304 edge of a larger tract (from 73 to 350 feet from the edge of the tract) to minimize
305 their fragmentation effects. Further, only four additional access roads cross over
306 these areas; therefore, just 8.4% of access roads are sited on potentially
307 undisturbed grasslands, primarily located near the edge of the larger grassland
308 tracts.

309

310 **Q. On page 16 of his testimony, Mr. Kirschenmann refers to mitigation for**
311 **fragmentation impacts. Are you familiar with this concept?**

312 A. I am familiar with the concept of mitigation and the concept of fragmentation
313 impacts. Through informed siting of turbines and associated infrastructure, Deuel
314 Harvest has avoided and/or minimized potential impacts on species of concern and
315 sensitive habitats. As detailed in the previous response, infrastructure has been
316 placed primarily on cropland or on the edges of grassland to minimize fragmentation.
317 Given the efforts to minimize habitat fragmentation, Deuel Harvest does not believe
318 mitigation is necessary. Further, as Mr. Kirschenmann stated in his testimony, the
319 State does not have a mitigation policy.

320

321 **Q. Mr. Kirschenmann states that SDGFP “recommended that turbines should not**
322 **be placed in or near wetland basins and special care should be made to avoid**
323 **areas with high concentration of wetlands.” How has the Project responded to**
324 **this recommendation?**

325 A. As explained in more detail above, no turbines are sited in delineated wetland
326 basins, and the Project team has worked closely to minimize the number of turbines
327 near wetland basins and in areas with a high concentration of wetlands. As the
328 Project layout is refined, Deuel Harvest will continue to assess and try to minimize its
329 impacts to wetlands.

330

331 **Q. Mr. Kirschenmann discusses potential for cumulative impacts for the Project**
332 **in relation to other Projects; did Deuel Harvest consider these impacts?**

333 A. The closest operating wind project to the proposed Project is the Buffalo Ridge II
334 Wind Farm, which is a 210-MW, 42,800-acre wind farm approximately 16.5 miles
335 south of the Project area, in northeastern Brookings and southeastern Deuel
336 counties. In addition, the Commission granted an Energy Conversion Facility Permit
337 to Otter Tail Power Company for the approximately 250-MW Astoria Station Project
338 which is approximately 14.4 miles south of the Project Area. Because of the distance
339 of these projects from the Project area, construction and operation of the Project
340 would not result in cumulative effects on resources in the area from siting the Project
341 in combination with other energy conversion or major industrial facilities.

342

343 **Q. How will the Project avoid impacts to State-threatened or endangered**
344 **species?**

345 A. The only state listed species observed was osprey. Over 839 avian survey hours,
346 two osprey were observed on the eastern edge of the Project boundary in
347 September 2017, 1.3 miles east of the nearest proposed turbine location. Osprey
348 are considered rare in the county and were likely migrating through when they were
349 observed. Given the low likelihood of osprey occurrences in the Project area, Deuel
350 Harvest does not anticipate impacting this species.

351

352 **Q. On page 20 of his testimony, Mr. Kirschenmann refers to the Natural Heritage**
353 **Database. Did Deuel Harvest consult this database for the Project?**

354 A. Yes. As noted earlier in my testimony, Deuel Harvest submitted a Natural Heritage
355 Database request in June 2016 and received a response in August 2016. However,
356 the Natural Heritage Database response that Mr. Kirschenmann referenced in his
357 testimony differs from the response that Deuel Harvest received from Casey Heimerl
358 on August 10, 2016 (Exhibits 2-3). The occurrence numbers differed for the Dakota
359 skipper, Poweshiek skipperling, and there was not a northern redbelly dace record.
360 Additionally, there were no bald eagle nests listed in the response received by Deuel
361 Harvest. Deuel Harvest will coordinate with SDGFP to try to understand the

362 discrepancies between the data provided in 2016 and the data provided in Mr.
363 Kirchenmann's testimony.

364

365 **VI. RESPONSE TO INTERVENORS**

366

367 **Q. Intervenor Heath Stone has testified that he is "concerned about how the**
368 **turbines will affect pheasant distribution in our area and avoidance by the**
369 **birds utilizing and staying near our property" (page 2). In support of his**
370 **testimony, Mr. Stone attaches a paper written by James N. Dupuie. Have you**
371 **reviewed this paper?**

372 A. Yes.

373

374 **Q. Please discuss your reaction to the Dupuie paper.**

375 A. Dupuie found that there was "no biologically significant avoidance of wind turbines
376 by male Ring-necked pheasants." The Dupuie paper states that while the results
377 "suggest that wind energy infrastructure impacts pheasant abundance, because of
378 the relatively small scale of these effects, we argue they are not biologically
379 significant. Large changes in turbine density and distance equate to changes in only
380 a fraction of a bird" (p. 23).

381

382 **Q. In your opinion, does the Dupuie paper support the concerns expressed by**
383 **Mr. Stone in his testimony?**

384 A. No.

385

386 **Q. Mr. Stone has testified that he is concerned about the Project's impact on**
387 **waterfowl. What is your response to this concern?**

388 A. Deuel Harvest has conducted two years of pre-construction avian use surveys to
389 assess the use of the project area by waterfowl and other avian species. Waterfowl
390 accounted for the majority of the large bird observations, representing 95.7% and
391 86.5% of all large bird observations in the first and second years of avian surveys,
392 respectively (Appendix J). The most frequently observed waterfowl species types

393 were geese and ducks, which were primarily observed migrating through the Project
394 area in the spring.

395
396 While waterfowl are abundant on the landscape, it is important to note that waterfowl
397 impact rates at wind energy projects have been low, even in areas of high use.
398 Generally, waterfowl impact rates have been shown to be insignificant at wind
399 facilities, as compared to the rate of use or incidence of these groups³. Relatively
400 low percentages of waterfowl carcasses have been consistently recorded in carcass
401 monitoring studies. At 116 wind energy facilities in the U.S. and Canada, waterfowl
402 comprised only 2.7% of the 4,975 carcasses observed.

403
404 Waterfowl migration in the region generally follows a broad-front pattern, meaning
405 that migrating waterfowl are dispersed across the region rather than concentrated in
406 narrow migration corridors⁴. Geese and ducks are also abundant on the landscape.
407 The North American population of ducks is approximately 41.2 million, with the
408 South Dakota population (approximately 202,000) significantly improved from the
409 previous year (+16%)⁵. The North American population of geese is approximately
410 21.7 million, with the “Western Prairie and Great Plains” and “Central Flyway Arctic
411 Nesting Canada Geese” populations (approximately 3.9 million) significantly
412 improved from previous year of available data (+35%) (USFWS 2018). Given the
413 size of the local area populations, the Project is not expected to have population
414 level effects to these species.

415
416 Regarding small bird types, passerines are the most abundant species type on the
417 landscape, accounting for 96.2% of all small bird observations at Deuel Harvest.
418 However, in the Deuel Harvest avian use survey, passerines were observed at rotor

³ Erickson WP, Wolfe MM, Bay KJ, Johnson DH, Gehring JL (2014) A Comprehensive Analysis of Small-
Passerine Fatalities from Collision with Turbines at Wind Energy Facilities. PLoS ONE 9(9): e107491.
doi:10.1371/journal.pone.0107491.

⁴ Available at https://www.sandiegocounty.gov/content/dam/sdc/pds/ceqa/Soitec-Documents/Final-EIR-Files/references/rtcref/ch2.3/2014-12-19_USGS2013_MigrationofBirds.pdf.

⁵ U.S. Fish and Wildlife Service. 2018. Waterfowl population status, 2018. U.S. Department of the Interior, Washington, D.C. USA.

419 height only 2.7% of the time (Appendix J), making them far less susceptible to direct
420 impacts.

421
422 **Q. Mr. Stone has testified that he is concerned about the Project’s impact on bald**
423 **eagles. What is your response to this concern?**

424 A. Deuel Harvest has conducted two years of pre-construction avian use surveys to
425 assess the use of the project area by bald eagles. Deuel Harvest also conducted two
426 years of nest surveys to locate and assess the status of bald eagle nests in and
427 around the Project area. Deuel Harvest is also conducting ongoing eagle nest
428 monitoring at an eagle nest north of Lake Alice, and will conduct raptor nest aerial
429 surveys in 2019. Deuel Harvest has committed to relocating turbines to 800 meters
430 from the Lake Alice nest to limit disturbance to eagles. Further, according to the
431 USFWS, no eagle fatalities have been reported at a wind energy facility in South
432 Dakota⁶.

433
434 **Q. Mr. Stone asserts that the Project should apply a two-mile setback to the eagle**
435 **nest north of Lake Alice. What is your response?**

436 A. Deuel Harvest has committed to maintaining the 800 meter (0.5 mile) setback
437 recommended under the South Dakota Bald Eagle Management Plan⁷.

438
439 **Q. Intervenor John Homan has testified regarding his general concerns with**
440 **respect to the Project’s potential environmental impacts, particularly with**
441 **respect to the Project’s location in the “Couteau” region. What is your**
442 **response?**

443 A. The Prairie Coteau region is located across eastern South Dakota and southwest
444 Minnesota and is characterized by rolling native tallgrass prairie. The USDA reported
445 that out of the 5.1 million acres of the Prairie Coteau region, 70% is cropland and

⁶ U.S. Fish and Wildlife Service. (2018) National Wind Wildlife Research Meeting Presentation. November 27-30, 2018.

⁷ Available at <https://gfp.sd.gov/UserDocs/nav/bald-eagle-plan.pdf>.

446 17% is rangeland or pastureland (2002). As discussed above, Deuel Harvest has
447 carefully sited its wind turbines and Project infrastructure to minimize additional
448 impacts of development on potentially undisturbed grassland, with the Project's
449 permanent impacts limited to one-quarter of 1% of the Project area's 16,285 acres of
450 potentially undisturbed grasslands (SDSU).

451

452 **Q. Mr. John Homan notes that the northern red belly dace may be found in**
453 **Monighan Creek. Is the Project anticipated to impact the Northern Red Belly**
454 **Dace?**

455 A. No. The Project is not anticipated to impact Monighan Creek. As such, no impacts
456 to the northern red belly dace are anticipated.

457

458 **Q. Mr. John Homan asserts that the Project “will be a long term negative affect on**
459 **all our waterfowl and other avian species” (page 3). What is your response?**

460 A. As explained above, Deuel Harvest has been sited to minimize impacts to waterfowl
461 and other birds by carefully siting turbines out of wetland basins and away from
462 wetland clusters. Research demonstrates that waterfowl are minimally impacted by
463 wind energy facilities, when compared to the rate of use or incidence of these
464 groups, representing only 2.7% of strikes at 116 wind facilities (see FN1).

465

466 **Q. Mr. John Homan states, “[a]ccording to studies, the longer the time frame a**
467 **wind project exists, the more damage to birds and other species.” Based on**
468 **your experience and analysis, is this statement accurate?**

469 The local bird population is made up largely of disturbance tolerant species that are
470 anticipated to adapt to the presence of turbines, meaning that most species are not
471 likely to be displaced by turbines, and will continue to inhabit the areas around the
472 turbines as they previously did. For example, most passerine species are
473 disturbance tolerant, and they were also the most commonly observed small bird
474 type (96.2% of all small bird observations) (Appendix J). I am not aware of any data
475 to support that the effects to birds and other species become greater the longer a
476 wind project exists.

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Q. Mr. John Homan refers to the monarch butterfly (page 4). Has Deuel Harvest considered potential impacts to the monarch butterfly?

A. Yes. Deuel Harvest conducted butterfly habitat assessments in 2017 and 2018 and have avoided siting turbines in potential suitable habitat (Appendix N). While this assessment was specific to the Dakota skipper and Poweshiek skipperling butterfly species, Monarch butterflies utilize similar habitat as identified for these species.

Q. Is the Project anticipated to have a negative impact on deer?

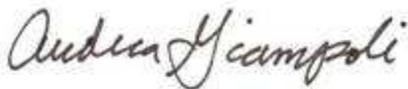
A. No. Deuel Harvest is not expected to have an impact on local deer behavior or populations.

VII. CONCLUSION

Q. Does this conclude your Rebuttal Testimony?

A. Yes.

Dated this 1st day of April, 2019.



Andrea Giampoli

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